| **Components and Point Value** | **Due Date** | **Outstanding – no errors full point value; 1 mistake 90% of full value; 2 mistakes 80%, 3 or more 70%**  **This table is for the grading scheme for the last submission representing all the opportunities for corrections.**  **The second table below indicates point values toward quarter grades.** |
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| **Grammar**  **15 points** | | * This is formal writing so do not use contractions such as don’t, didn’t, won’t, etc. * No grammatical errors, typos and misspellings. Check for grammar by reading it out loud to a parent, guardian or friend. * Paragraphs must be well organized; topic sentence leads off the paragraph and transitional sentence leads one paragraph into another (look up examples if you don’t understand what a topic sentence is) * Appropriate word selection * Correct use of scientific terms |
| **Format**  **15 points** | | Header is single spaced, contains Student’s name, period number, descriptive title, date of submission and page numbers and total pages in the document (go to MS word header->blank; once in the header go to insert -> page number-> current position-> select format Page X of Y)  All sections must be labeled on a left-justified separate line in capital letters e.g.,  ABSTRACT  INTRODUCTION  METHODS  RESULTS  CONCLUSION  REFERENCES |
| **Title**  **2 points** | | * Title must be descriptive of question studied and work performed e.g., “The effect of fertilizer dose on lima bean plant growth” * Includes dependent variable (in the example shown above this is plant growth), independent variable (in this example it is fertilizer dose) and organism studied (in this example is lima beans). |
| **Introduction and References**  **15 points** | August 23 & 24, 2017 | * The topic sentence must be general enough to understand the subject being studied. Using the example of fertilizer dose, a good topic sentence is…”Plants require sunlight, carbon dioxide, water and nutrients in order to grow.1” A reference must be supplied in the form of a superscripted Arabic numeral using MicroSoft Endnotes capability. APA or MLA format is also acceptable. The next sentence could be “Nutrients are found in fertilizers and include phosphorous, potassium and nitrogen among other elements.2” Notice the bridge between the word nutrients and fertilizers which is the subject of the study. Also note that all scientific statements of fact have references. A final sentence leading to the hypothesis might be “The nutrient requirements of many plants have been studied but the minimal dose required to have a significant impact on the growth of lima beans has not been reported.” Now the hypothesis can be stated as “It is hypothesized that there is a minimally effective dose of fertilizer that can significantly improve lima bean growth and that dose may be uncovered in a dose-response study.” * Gives appropriate information to previous studies that has an impact on the current study and uses in text citations using MS Word ENDNOTES with Arabic numerals (or APA or MLA format – your option) * Citations are listed at the end of the document in an acceptable format * Acceptable reference format examples include:  1. In the case of a web address give 3-6 words describing what information is in the reference that is relevant to your use of it; follow this with the words ‘last accessed on’ and give the date, then paste in the URL address 2. If you used a peer reviewed article, use American Medical Association format as the example that follows illustrates   Last name of the first author followed by ‘et al. ‘ if there are more authors. The title of the article followed by a period. The year of publication followed by a semi-colon then the volume number followed by a colon and finally the page numbers inclusive followed by a period.  Cardinale et al. Biodiversity loss and its impact on humanity. Nature 2012;486:59-67. Note you can also use APA or MLA formatting and those can be found on the internet. The same reference would appear as follows:  Cardinale, B. J., Duffy, J. E., Gonzalez, A., Hooper, D. U., Perrings, C., Venail, P.,…and Naeem, S. (2012). Biodiversity loss and its impact on humanity. Nature. 486, 59-67.  For APA guidance see… <https://owl.english.purdue.edu/owl/resource/560/01/>   * Give a description of the specific purpose of the study by stating the hypothesis (expectation of the outcome of an experiment with a rationale for why this may be so) * Do not include superfluous (unrelated) information and make sure the Introduction is not wordy; be concise. * The last sentence of the Introduction should seamlessly flow into the Methods |
| **Methods**  **15 points** | September 7 & 8, 2017  Revised Intro plus Materials and Methods | * Always write the Methods in paragraph form and always in the past tense * No pronouns or reference to any person; however, you can refer to a job function such as subject or tester. * State what was done and not by whom or why it was done; the why may go into a discussion within the conclusion. * Describe how the experiment was performed with sufficient detail to enable another scientist to repeat the experiment and obtain the same results (for example, specify what seeds or plants were used, what soil and what the plants were fed with and how often). * Present what was done in a logical order and adequately detailed without including standard procedures that all scientist know how to do (e.g., don’t say ‘a pencil and piece of paper was used to record the data’). * Specific chemicals and equipment should be mentioned along with their source (not as a list but as part of a sentence) * Describe what data were collected, how it was used to calculate means, standard deviations and how those were used to plot the data in a line or bar graph * State how the data were analyzed (e.g., a t-test was applied to the data) |
| **Results**  **10 points** | September 27 & 28, 2017  Revised Intro and revised Methods plus Results | * Have a topic sentence that introduces the reader to the figure and what is contained in it. * A sentence must be included about the results of the statistical analyses of the data (e.g., A t-test was applied to data comparing treatment A and B on day 21 and returned a p-value of 0.0345) * All pertinent data are described (e.g., don’t say that you measured leaf number in the Methods section but fail to include that data in the Results) * Raw unprocessed data should not be in the paper * Data presented in a logical manner to enable the reader to draw conclusions * No conclusions or comments about the implication of the results should be put in the Methods section – save that for the conclusion * All tables and figures have appropriate titles and legends and can be understood when printed in black and white (do not rely on color in your figures) * Use significant figures to report results |
| **Conclusions (includes discussion)**  **10 points** | Oct 20 & 23, 2017  Revisions to all (Intro, Methods, and Results) plus Conclusion | * Question and hypothesis restated * Conclusions are stated clearly with explicit reference to the data that support a conclusion stating p-values and comparisons made * Argument for conclusions must be well organized * Importance of conclusions must be discussed * Conclusions related to other studies must be put into a context of your observations * Make clear distinction between speculations and results that can support your conclusions * Final paragraph states the major finding of the study (the take home message) |
| **References**  **8 points** | November 8 & 9, 2017  Revisions to all previously submitted plus Refs. | * All cited sources present in American Medical Association format or as a website in accordance to instructions shown above in the Introduction section (again you can use MLA or APA as well – pick one and stick with it) * No references should be present that are not cited in the body of the paper * References must be relevant and anyone reviewing the paper should be able to access the reference if it is properly formatted |
| **Abstract**  **10 points** | December 4 & 5, 2017  Revisions to all previously submitted plus Abstract | * Always written last and positioned first in the paper * Abstract should contain elements of the Introduction, Methods, Results and Conclusion all in one paragraph. * States clearly the question being asked * Gives hypothesis being tested * Highlights most important methods with enough information to understand how the experiment was done * States major findings and reports the p-value * Summarizes the major conclusions * Gives the reader a sense of the importance of your study in relation to the work of others in the field * Abstract must not exceed 200 words |
| **Overall Evaluation**  **Cumulative of 100 points graded as 25% of the final exam** | Dec 17-18  (Thurs-Fri)  All previously submitted – last chance for revisions are due this day | * **Total available points are 80. This represents 25% of your final exam score. Therefore, the proportion of points calculated will be (X points achieved / 80) x 100 = percent obtained from the Research Paper. This will be converted to a 25% weighted value and added to your multiple choice final exam that will be weighted 75% of the final exam score.** |

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| **Due date** | **Sections of the paper to be submitted** | **Points awarded toward quarter grade summative assessments** |
| August 23 & 24, 2017 | Draft 1 INTRODUCTION plus REFERENCES | 25 |
| September 7 & 8, 2017 | Draft 2 INTRODUCTION plus REFERENCES  Draft 1 METHODS | 50  25 |
| September 27 & 28, 2017 | Draft 3 INTRODUCTION plus REFERENCES  Draft 2 METHODS  Draft 1 RESULTS | 100  50  25 |
| Oct 20 & 23, 2017 | Draft 4 INTRODUCTION plus REFERENCES  Draft 3 METHODS  Draft 2 RESULTS  Draft 1 CONCLUSION | Subject to removal of up to 100 points with failure to make corrections  100  50  25 |
| November 8 & 9, 2017 | Draft 5 INTRODUCTION plus REFERENCES  Draft 4 METHODS  Draft 3 RESULTS  Draft 2 CONCLUSION  Draft 1 ABSTRACT | Subject to removal of up to 100 points with failure to make corrections  Subject to removal of up to 100 points with failure to make corrections  100  50  25 |
| December 4 & 5, 2017 | Draft 6 INTRODUCTION plus REFERENCES  Draft 5 METHODS  Draft 4 RESULTS  Draft 3 CONCLUSION  Draft 2 ABSTRACT | **Points awarded toward semester final exam**  Up to this point, all grades went toward your quarter grade (1 & 2). The entire paper at this submission is worth 80 points as indicated in the table above and the percentage of those 80 points achieved will be adjusted to a maximum of 25% of the final exam. The multiple-choice component of the exam will be awarded 75% of the final exam score. This grade is not part of the quarter grades but rather toward the semester grade. |